

ABSTRACT

Improving Order Picking Efficiency in the Spare Parts Warehouse of PT Asyrof Fadel Ali through the Integration of ABC, CBS, and COI Using a Human-Oriented Approach and Discrete Event Simulation

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This study aims to analyze the existing slotting conditions in the spare parts warehouse of PT Asyrof Fadel Ali, design a more systematic proposed slotting scheme, and evaluate its impact on order picking efficiency in the context of a manual warehouse involving interns. The main problem in this study is the suboptimal placement of goods based on turnover rates and physical characteristics, resulting in high travel and search times during the order picking process. The study employs a verifiable quantitative method using an experimental design based on Discrete Event Simulation. The proposed slotting design was developed through the integration of ABC Analysis, Class-Based Storage, and the Cube per Order Index, combined with a simple MIS to assist workers in identifying item locations. The results indicate that the existing slotting does not optimally support order picking efficiency, whereas the proposed slotting generates a more structured, easier-to-understand storage arrangement that better supports operational efficiency. Improvements are evident not only in the technical aspects of slotting but also in the reduction of information-search barriers for workers. Thus, this study demonstrates that the effectiveness of manual warehouse slotting is determined not only by the physical proximity of goods but also by the alignment between the storage system, information support, and workers' ability to process location information.

keywords: Slotting , SLA, SLAP, layouting, warehouse productivity, inventory management, efficiency, order picking, ABC analysis, class-based storage, cube per order index, Discrete Event Simulation